VA/DoD Clinical Practice Guideline for the Diagnosis and Management of Hypertension

US Army Medical Command
Quality Management Department
Office of Evidence-Based Practice
Fort Sam Houston, TX 78248

VA/DoD Guideline Purpose

- **One of the priorities established by the Army Surgeon General to ensure consistent and high quality health care is being delivered across the Army health system**

VA/DoD Guideline Adaptation Process

- VA and DoD began collaborative project in 1998
- Adaptation of existing clinical practice guidelines for selected conditions
- Selection of HEDIS measures
- Integration of VA/DoD prevention, pharmaceutical and informatics efforts

VA/DoD Hypertension Guideline Adaptation Process

- 1999 VA/DoD Hypertension Guideline adapted from 6th Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC VI)
- Update started in 2002 then delayed due to large RCT called the Antihypertensive and Lipid Lowering Treatment to Prevent Heart Attack Trial (ALLHAT)
- ALLHAT completed, JNC 7 written
- Adaptation of the 2004 VA/DoD Hypertension Clinical Practice Guideline using level A evidence

Level of Evidence/Strength of Recommendation

1a. Strength of Recommendation	
Level I	Usually indicated, always acceptable and considered useful and effective.
Level IIa	Acceptable, of uncertain efficacy and may be controversial. Weight of evidence in favor of usefulness/efficacy.
Level IIb	Acceptable, of uncertain efficacy and may be controversial. May be helpful, not likely to be harmful.
Level III	Not acceptable, of uncertain efficacy and may be harmful. Does not appear in guidelines.

1b. Level of Evidence			
	A	**B**	**C**
Primary Evidence	Randomized	Well designed clinical studies	Panel consensus
Secondary Evidence	Other Clinical studies	Clinical studies related to topic but not in a population with hypertension	Clinical studies Unrelated to topic

Level A Recommendations

RECOMMENDATIONS WITH THE HIGHEST EVIDENCE: The highest evidence for recommendations is A, defined as “a strong recommendation based on randomized controlled trials that the intervention is always indicated and acceptable.”

- **The following practices are strongly recommended based on evidence reviews:**
  1. **Blood pressure should be measured with a technique using a properly calibrated and validated instrument [R=A]**
  2. **Blood pressure measurement can identify adults at increased risk for cardiovascular (CV) disease due to high blood pressure [R=A]**
  3. **The treatment of high blood pressure substantially decreases the incidence of cardiovascular disease and causes few major harms [R=A]**

Level A Recommendations

(Cont.)

Continued

Drug Therapy:

4. Thiazide-type diuretics are recommended as first line therapy for drug treatment of hypertension either as monotherapy or in combination with other agents. [R=A]

5. The following may be used as alternative or supplementary therapy:

- **a. Angiotensin-Converting Enzyme Inhibitors (ACEIs) [R=A]**
- **b. Angiotensin II Receptor Blockers (ARBs) [R=A]**
- **c. Beta-blockers (BBs) [R=A]**
- **d. Long-acting calcium channel blockers (CCBs)[R=A]**

Level A Recommendations

(cont.)

Other Supplemental Agents:

6. **Reserpine can be used as supplemental therapy when other agents are not providing clinical adequate response [R=A]**
7. **Adjust Therapy**

   a. If a thiazide-type diuretic is not chosen as the initial drug, it should be used as the second agent, unless contraindicated or not tolerated, because it frequently enhances the effects of the initial agent and has the best cardiovascular outcome data. [R=A]

   b. When using combination therapy, select those agents that have been shown to reduce morbidity and mortality.

   [R=A]

Accurate Blood Pressure Technique

1. **Blood pressure should be measured with a technique using a properly calibrated and validated instrument:**

   - **Patient should be seated quietly for 5 minutes with back supported, feet on the floor, and arm bared, unrestricted by clothing, and supported at heart level. Measurement of BP in the standing position may be indicated for patients at risk for postural hypotension or at the discretion of the clinician.**

   - **Smoking, exercise, or caffeine ingestion should not have occurred within 30 minutes prior to the BP measurement.**

   - **The appropriate blood pressure cuff size should be chosen for the patient. The cuff should be wrapped snugly around the arm with the bladder centered over the brachial artery. The bladder should encircle at least 80% of the arm.**

Accurate Blood Pressure Technique (cont.)

For Auscultatory Measurements Only:

- **Palpated radial pulse obliteration pressure should be used to estimate the systolic BP (SBP). The cuff should then be inflated 20-30 mm Hg above this level for the auscultatory determinations.**

- **Position the stethoscope over the brachial artery and rapidly inflate the cuff. Deflate the cuff at a rate of 2 to 3 mm Hg per second, listening for Phase 1 and Phase 5 Korotkoff sounds. The first appearance of sound (Phase 1) is used to record the SBP. Phase 5, at the disappearance of sound, is the diastolic BP (DBP) in adults. Listen 10 to 20 mm Hg below Phase 5 for any further sound then deflate the cuff completely.**

- **The BP should be recorded in even numbers with the patient's position, arm used, and cuff size documented.**

- **BP readings should be repeated in the same arm and averaged, if different. Two minutes should elapse before repeating the BP measurement. If the readings differ by more than 5 mm Hg, additional measurements should be obtained.**

Accurate Blood Pressure Technique (cont.)

2. **Measurements can be taken with a mercury sphygmomanometer, but a recently calibrated aneroid manometer or a validated electronic device is an acceptable alternative.**

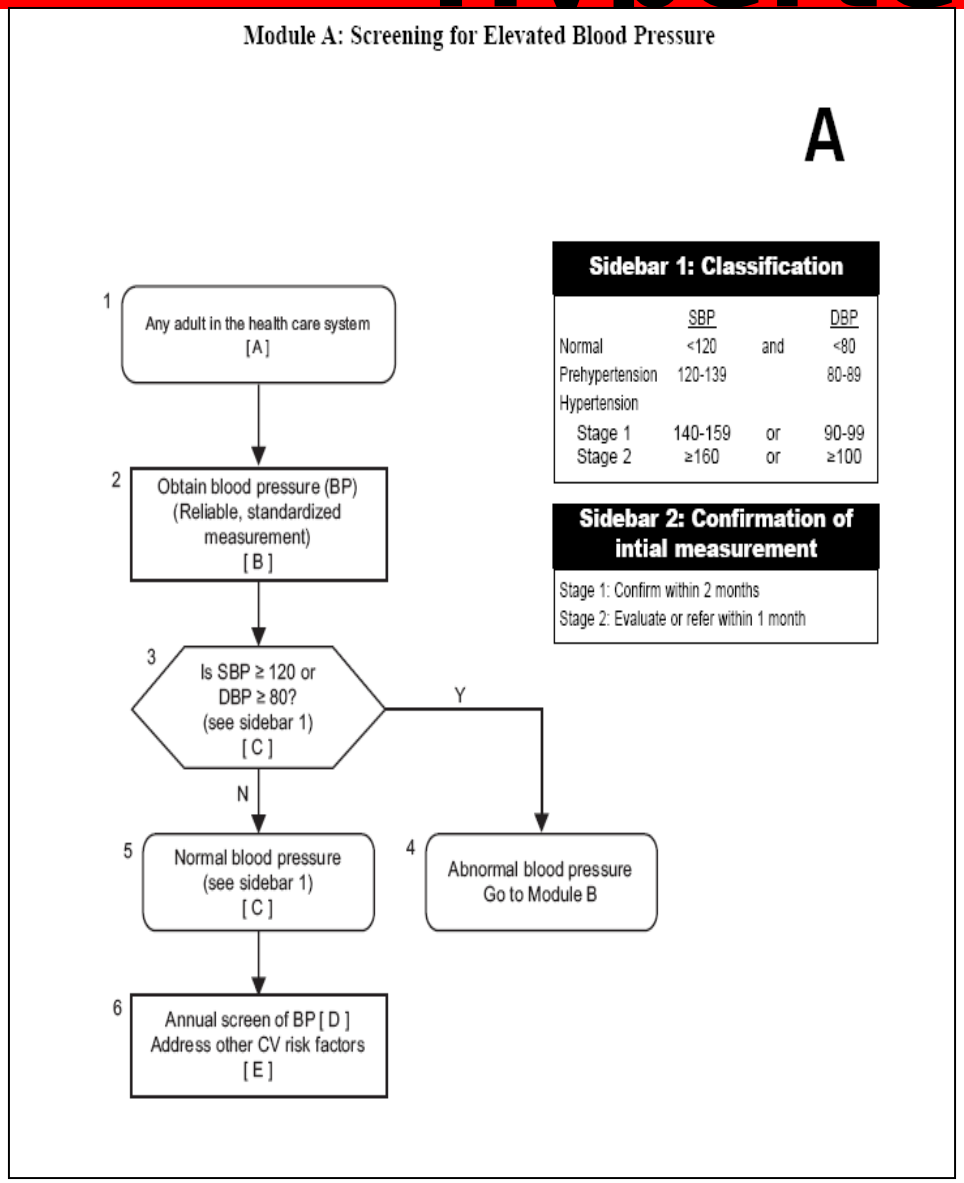
Hypertension Guideline Key Points

- **Screen blood pressure (BP) in adults annually since BP rises with increasing age**
- **Encourage patients with pre-hypertension to engage in lifestyle changes to reduce risk of proceeding to hypertension**
- **Explain to patients that blood pressure control reduces cardiovascular risks over a lifetime**
- **Once hypertension is diagnosed, take aggressive action to reduce blood pressure**
- **Include lifestyle modifications for all patients, as appropriate**
- **Use thiazide-type diuretics, alone or in combination with other agents, as first line therapy**

Hypertension Guideline Key Points (cont.)

- Choose other agents based on evidence for reduction of mortality and morbidity. These agents include (in alphabetical order): angiotensin-converting enzyme inhibitors (ACEIs), angiotensin II receptor blockers (ARBs) beta-blockers, and long-acting calcium channel blockers
- Strongly consider starting therapy with a combination of 2 drugs for patients with Stage 2 hypertension
- Target blood pressure goals appropriately for each patient and titrate therapy to achieve that goal through:
  - a. Informing patients about their blood pressure (BP) goal
  - b. Following-up closely until goal achieved
  - c. Adjusting medication as necessary at each visit
  - d. Keeping the medication regimen as simple as possible
  - e. Educating and involving patients in their care plan
  - f. Using ancillary staff and available programs to support and help in reaching target goal

Management of Hypertension



Sidebar 1: Classification

	SBP		DBP
Normal	<120	and	< 80
Prehypertension	120-139		80-89
Hypertension			
Stage 1	140-159	or	90-99
Stage 2	≥160	or	≥ 100

Sidebar 2: Confirmation of initial measurement

Stage 1: Confirm within 2 months
Stage 2: Evaluate or refer within 1 month

Therapeutic Lifestyle Changes (TLC)

Table 3. Impact of Lifestyle Therapies on BP in Hypertensive Adults*

Intervention	Lifestyle Modification or Change	Systolic BP Reduction (range)
Daily sodium intake	Maximum of 100 meq/L day (2.4 g sodium or 6 gms sodium chloride)	2-8 mm Hg
Weight loss	Reduce to and/or maintain normal body weight (e.g., Body Mass Index, 18.5-24.9)	5-20 mm Hg per 10-kg wt loss
Alcohol consumption	Limit to no more than 2 drinks per day for men, and no more than 1 drink per day in women and light weight persons	2-4 mm Hg
Exercise	Aerobic exercise for at least 30 minutes, most days of week	4-9 mm Hg
DASH Diet	Dietary Approaches to Stop Hypertension (DASH) diet rich in fruits, vegetables, and low-fat diary products, with overall reduced saturated and total fat content	8-14 mm Hg

*Modified from JNC 7

Hypertension Tools for Providers

Pharmacotherapy for Cardiovascular Diseases in Primary Care

VA/DoD Medications Used in the Management of Cardiovascular Diseases in Primary Care

DRUG*	ORAL DOSE	POTENTIAL SIDE EFFECTS	PRECAUTIONS/CONTRAINDICATIONS/COMMENTS
ANTIPLATELET/ANTICOAGULANT			
Aspirin[h]	UA/MI 160 mg-325 mg (1* dose) Chronic 81 mg-325 mg qd	• GI intolerance: dyspepsia, nausea, GI bleeding, heartburn • Bronchospasm: prominent in patients with a history of asthma and nasal polyps • Tinnitus • Thrombocytopenia	• ASA hypersensitivity: bronchospasm, angioedema, and anaphylaxis • Active, severe bleeding • Clopidogrel should be used in patients who are unable to take ASA
Clopidogrel[h,i,k]	NSTE-ACS 300 mg oral load then 75 mg qd for at least 1 month & up to 9 months with elective PCI Post stent 300 mg oral load then 75 mg qd at least 1 month & up to 12 months Non acute conditions 75 mg qd May be given with aspirin (81-325 mg) unless aspirin is contraindicated or not tol	• Thrombotic thrombocytopenic purpura rarely reported (sometimes after less than 2 weeks exposure) • Bleeding • GI intolerance: diarrhea • Clopidogrel increases risk of major bleeding (i.e., requiring transfusion of ≥ 2 units) when combined with ASA	• History of bleeding diathesis • Chest pain without ECG changes in whom etiology of chest pain is unlikely to be ischemic in origin • Known hypersensitivity to ticlopidine, due to cross reactivity or any component of the product • Known hypersensitivity to clopidogrel or any component of the product • Active pathological bleeding (GI bleeding and intracranial hemorrhage) • Withhold clopidogrel for 5-7 days prior to elective CABG
Warfarin[k,l]	Prevent systemic embolization: INR 2-3 Prevent recurrent MI wit first 3 months: INR 2.5-3		
CARDIOVASCULAR			
ACE Inhibitors			
Captopril[h,i]	12.5–150 mg/day (divided		
Enalapril[h]	2.5–20 mg/day (divided d		
Fosinopril[h]	5–40 mg qd		
Lisinopril[h,i]	2.5–40 mg qd		
Ramipril[h,i,n]	2.5–10 mg/day (divided d qd for prevention cardiovascular ev		

VA access to full guideline: http://ww
DoD access to full guideline: http://
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Directory of Cardiovascular Organizati and Related Websites

This directory is an expanded list of government agencies, voluntary associations, ar
private organizations that provide cardiovascular information and resources.

These organizations and related websites offer educational materials and support to
people with cardiovascular disease and the general public. Other sites are specific to
health care professionals.

Links to non-federal organizations are provided solely as a service to our users. Link
constitute an endorsement of any organization by the Army Medical Department (AMEDD) or the Department of Defense (DoD) and none should be inferred. The AMEDD and the DoD is not responsible for the content of the individual organization's web page found via these web sites or their links.

Updated and current as of July 2004.

VA/DoD CLINICAL PRACTICE GUIDELINE FOR THE DIAGNOSIS AND MANAGEMENT OF HYPERTENSION

Guideline Summary

Update 2004

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VA access to full guideline: http://www.oqp.med.va.gov/cpg/cpg.htm
DoD access to full guideline: http://www.qmo.amedd.army.mil/pguide.htm
September 2004

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VA/DOD CLINICAL PRACTICE GUIDELINE FOR THE DIAGNOSIS AND MANAGEMENT OF HYPERTENSION

KEY POINTS CARD

Update 2004

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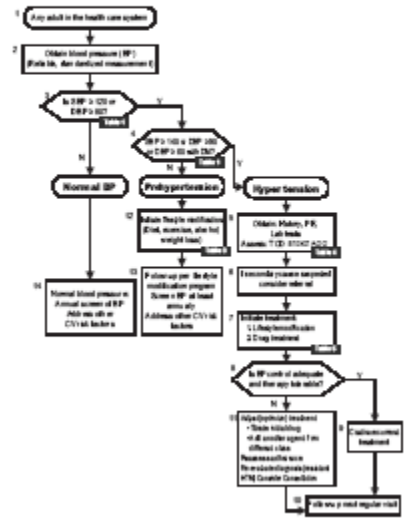

Downloadable from www.QMO.amedd.army.mil

Hypertension Tools for Patients

Downloadable from https://www.QMO.amedd.army.mil

Hypertension Links

- **https://www.QMO.amedd.army.mil**
- **http://www.healthquality.va.gov/Hypertension_Clinical_Practice_Guideline.asp**
- **http://www.nhlbi.nih.gov/health/public/heart/index.htm**
- **http://www.heart.org**